REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the present application.

The Examiner's Office Action dated December 6, 2000, has been received and its contents reviewed. Claims 1-6, 8-20, 22-34, 36-48, and 50-167 were pending in the present application prior to the instant amendment. By this amendment, claim 123 has been amended. Subsequently, claims 1-6, 8-20, 22-34, 36-48, and 50-167 are pending, of which claims 1, 8, 15, 22, 29, 36, 43, 50, 57-60, 68-71, 79-82, 90-93, 101-104, 112-115, 123-126, 134-137, 145-148, and 156-159 are independent.

Referring now to the Office Action, in Section 2, claims 1-6, 8-20, 22-34, 36-48, and 50-167 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. The rejection is respectfully traversed.

Applicants respectfully submit that it is rather clear that the hard-carbon coating is an outermost layer in the language of claims 1-6, 8-20, 22-34, 36-48, and 50-167 reciting an optical disk having a surface protected by a protective film comprising a hard-carbon coating. Accordingly, the § 112, second paragraph, is respectfully requested to be reconsidered and withdrawn.

With regard to claim 123, Applicants appreciate the Examiner's notice of the misspelling of the word "compact" and accordingly have amended the claim to correct the misspelling.

In Section 4 of the Office Action, claims 101, 103, 105-107, 109-110, 112, 114, 116-118, 120-121, 123, 125, 127-129, 131-132, 134, 136, 138-140, 142, 143, 145, 147, 149-151, 153-154, 156, 158, 160-162, and 164-165 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over JP 02-058744. The Office held on the basis that the high resistance to degradation, which allegedly would have to occur through holes in the carbon film, for over 1000 hours that any pin-holing in the film would be below the cited limit of the claim. This rejection is respectfully traversed.

Having studied JP '744, Applicants respectfully submit that JP '744 discloses forming a hard-carbon coating in contact with a reflection layer of a disk for protecting the reflection

layer from water an oxygen contained in the atmosphere. Further, JP '744 discloses the properties of the hard-carbon coating such as Vicker's hardness of 2000 Kg/mm or more and transmittance of 90% more. Notwithstanding the disclosure of JP '744, it has been ascertained that improvements in hardness and adhesion of the hard-carbon coating and the prevention of the generation of pin-holes are not always performed together. The Office is respectfully directed to the present specification, page 2, lines 23-26 for support of this statement of fact. Therefore, Applicants respectfully submit that JP '744 does not teach or suggest reducing the pin holes while disclosing the hard-carbon coating as the protective layer of the disk. Accordingly, the § 103(a) rejection of claims 101, 103, 105-107, 109-110, 112, 114, 116-118, 120-121, 123, 125, 127-129, 131-132, 134, 136, 138-140, 142, 143, 145, 147, 149-151, 153-154, 156, 158, 160-162, and 164-165 is insupportable and is requested to be reconsidered and withdrawn.

In Section 5 of the Office Action, claims 101, 103, 105-107, 109-110, 112, 114, 116-118, 120-121, 123, 125, 127-129, 131-132, 134, 136, 138-140, 142, 143, 145, 147, 149-151, 153-154, 156, 158, 160-162, and 164-165 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over JP 02-058744 and further in view of Marchant "Optical recording: A technical overview", pp. 132-139 (©1990). This rejection is respectfully traversed.

Applicants respectfully submit that the arguments set forth above against the § 103(a) rejection of these claims over JP '744 are also applicable to the rejection of the same claims over JP '744 in view of Marchant.

In Section 6 of the Office Action, claims 101-107, 109-118, 120-129, 131-140, 142-151, 153-162, and 164-166 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over JP 02-058744 in view of Marchant "Optical recording: A technical overview", pp. 132-139 (©1990) combined with either Shinohara (JP 01-184722) or Kitoh et al. ('850).

Applicants respectfully submit that the arguments set forth above against the application of JP '744 in the previous § 103(a) are also applicable to the § 103(a) rejection of claims 101-107, 109-118, 120-129, 131-140, 142-151, 153-162, and 164-166 over JP '744 in view of Marchant and either Shinohara JP 01-184722 or Kitoh et al. (U.S. Patent No. 5,275,850). As JP '744 is at least deficient in disclosing or suggesting the number of pin-holes in the hard-carbon coating of 30/mm^2 or less, the combination of JP '744 with other secondary references would be insupportable.

In Section 7 of the Office Action, claims 101, 103, 105-110, 112, 114, 116-121, 123, 125, 127-132, 134, 136, 138-143, 145, 147, 149-154, 156, and 158-165 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over JP 02-058744, in view of Ikoma et al. ('829). This rejection is respectfully traversed.

Applicants respectfully submit that the arguments set forth above against the application of JP '744 in the previous § 103(a) are also applicable to the § 103(a) rejection of claims 101, 103, 105-110, 112, 114, 116-121, 123, 125, 127-132, 134, 136, 138-143, 145, 147, 149-154, 156, and 158-165. Accordingly, the § 103(a) of these claims are respectfully requested to be reconsidered and withdrawn.

In Section 8 of the Office Action, claims 1-6, 15-20, 29-34, 43-49, 57, 59, 61-66, 68, 70, 72-77, 79, 81, 83-88, 90, 92, 94-99, 134, 136, 138-143, 145, 147, 149-154, 156, 158, and 160-165 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyamoto (JP 04-219647), or Hirayama et al. (JP 04-355228), in view of Ikoma et al. ('829) combined with either Shinohara et al. (JP 63-275037) or Murai et al. (U.S. Patent No. 5,182,132) and Brezoczky et al. ('229) in view of Ikoma et al. ('829) combined with Shinohara et al. (63-275037) or Murai et al. ('132) and further in view of Amata et al. (JP 04-230034). This rejection is respectfully traversed.

The Office asserted that it is well known to use the carbon film having excellent hardness, denseness, and reduced defects such as those of Shinohara et al. or Murai et al. However, Applicants respectfully submit that Shinohara et al. and Murai et al. do not disclose or suggest reducing the pin-hole numbers to $30/mm^2$ or less, and how much the number of pin-holes to be reduced with respect to the carbon film having the thickness of 500 Å or less, as shown and claimed in the present application. Applicants respectfully request the Office to point out the particular language in Shinohara et al. and Murai et al. that teaches or suggests the claimed features. Therefore, the § 103(a) rejection of claims 1-6, 15-20, 29-34, 43-49, 57, 59, 61-66, 68, 70, 72-77, 79, 81, 83-88, 90, 92, 94-99, 134, 136, 138-143, 145, 147, 149-154, 156, 158, and 160-165 is insupportable, as Shinohara et al., and Murai et al. are deficient as discussed above and there combination with other cited references is insupportable. Accordingly, the § 103(a) rejection is respectfully requested to be reconsidered and withdrawn.

With respect to Sections 9, 10, 11, 12, and 13 of the Office Action, wherein Shinohara et al. and Murai et al. are applied in the § 103(a) rejections, Applicants respectfully submit that as

Shinohara et al. and Murai et al. do not disclose or suggest reducing the pin-hole numbers to 30/mm^2 or less, and how much the number of pin-holes to be reduced with respect to the carbon film having the thickness of 500 Å or less, as shown and claimed in the present application, their combination with other cited references are insupportable. In order to not burden the records, Applicants reserve the rights to argue against each and every rejections in Sections 9-13 in the future, if necessary. Accordingly, the § 103(a) rejections in Sections 9, 10, 11, 12, and 13 of the Office Action are respectfully requested to be reconsidered and withdrawn.

Claims 1-6, 8-20, 22-34, 36-48 and 50-167 are provisionally rejected under the obviousness-type double-patenting doctrine as being unpatentable over the claims of copending Application Nos. 08/910,352 and 09/396,382. Applicants respectfully request that these rejections be held in abeyance until the next Office Action.

CONCLUSION

Having responded to all rejections set forth in the outstanding Final Office Action, it is submitted that claims 1-6, 8-20, 22-34, 36-48, and 50-167 are now in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicants' undersigned representative.

Respectfully submitted,

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VERSION OF AMENDED CLAIMS WITH
MARKINGS TO SHOW CHANGES MADE

123. (Amended) A method of operating a compact [comapct] disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less.